Defense Acquisition University

Hot Topics Forum:

Promoting Competition via an Open System Architecture (OSA) and Use of Data Rights (DR)

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- **Nickolas H. Guertin,** PE, Director for Transformation, Deputy Assistant Secretary of the Navy, Research, Development, Testing & Evaluation
- **Bill Decker,** DAU South Director, Technology Transition Learning Center of Excellence
- **Jane Barrow,** Intellectual Property Attorney, NAVSEA
- **Brian Womble,** Deputy, Open Architecture, DASN, RDT&E

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Overview

- What is an Open System Architecture (OSA)?
- How does DoD use OSA to promote competition?
- Why do we need OSA?
- Examples of Successful OSA Programs
  - Anti-Submarine Warfare's (ASW) Advanced Processing Build (APB)/Acoustic-Rapid COTS Insertion (A−RCI)/Tactical Control System (TCS) Programs (Navy Program)
  - Office of Naval Research (ONR) Surface Electronic Warfare Improvement Program (SEWIP) (Navy Program)
  - Program Manager Integrated Air and Missile Defense (IAMD) (Army Program)
  - Unmanned Aerial System (UAS) Control System (UCS) (OSD Program)
- OSA Summary
- Transition to "Effectively Managing Data Rights" (To promote OSA by Bill Decker)

What is an Open System Architecture (OSA)?

- OSA is a strategic “Business and Technical” acquisition approach that leverages the commercial market-place in a way to control and optimize design features to ensure that a level-field of competition provides the best valued product for our war-fighter in a timely basis. Key design features include:

BUSINESS

- Create a Competition-focused Environment (A **CULTURE** of Competition)
  - Open Design Disclosure for All Stakeholders (Data Rights)
  - Enterprise Strategy
- Ensure Government Access to Data for Reduced Life-Cycle Sustainment Costs

TECHNICAL

- Use a Modular Design (Loose Coupling with High Cohesion)
- Use of Open Standards (Public, Published and Popular (The Three P’s))

- A successful OSA implementation allows for competition and ease of change that provides the best value to our war-fighters.

Specifically, What is an Open System Architecture (OSA)?

- OSA FIVE (5) CORE IMPLEMENTING PRINCIPLES:

BUSINESS (Culture of Competition)

1. Strategic Use of Data Rights to Ensure Level Competition Field
2. Enterprise investment strategies (Spend Least to Get Best)
3. Transformation of Life Cycle Sustainment Strategies (Plug and Play)

TECHNICAL

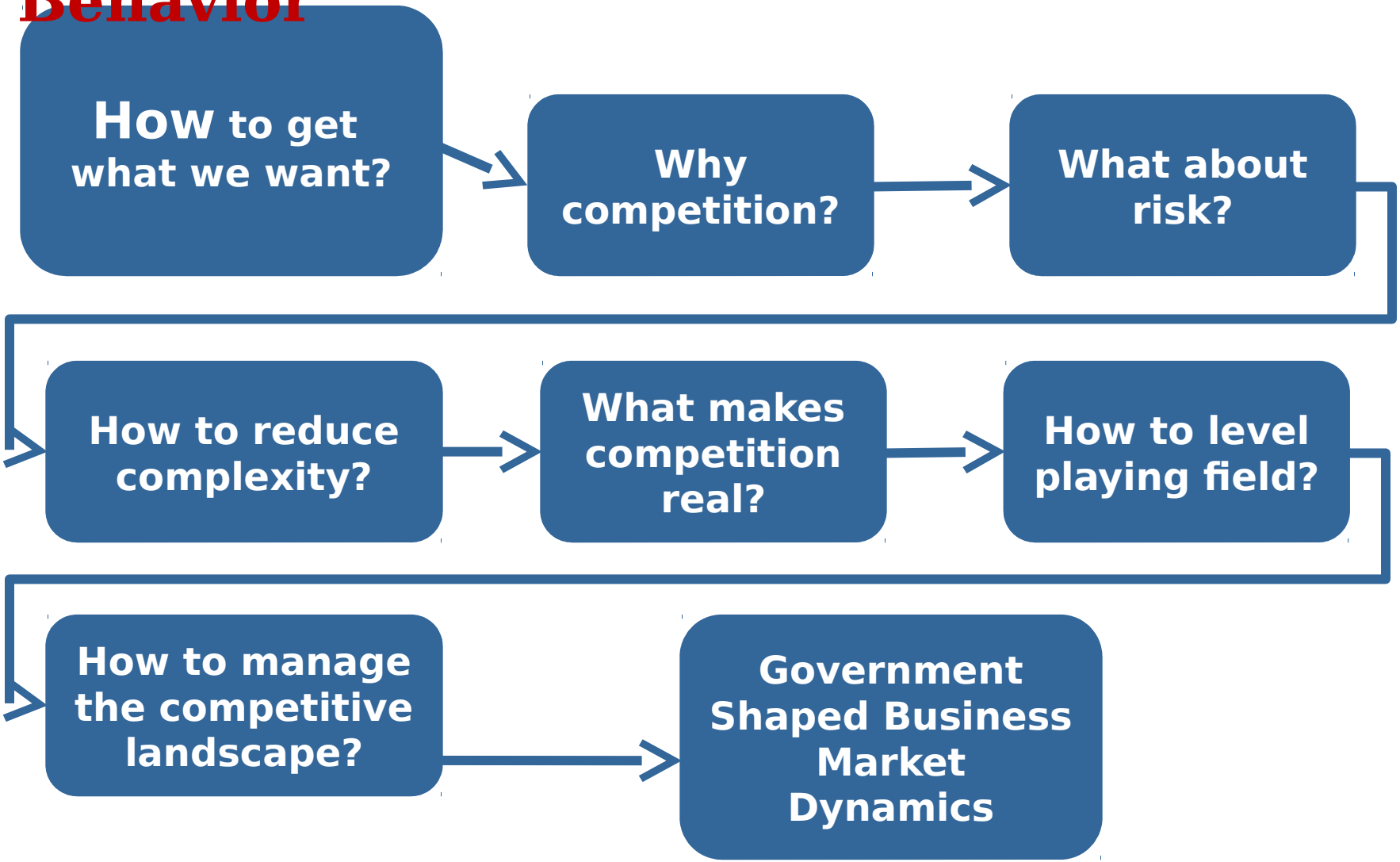
4. Modular designs with loose coupling and high cohesion
5. Lower Development Risk via System Designs (Open Design Disclosure with peer reviews by all)

- **Achievement of the five (5) core principles affirmatively answers the question "*Can a qualified third party add, modify, replace, remove, or provide support for a component of a*

How does DoD use OSA to promote competition

(Mr. Nick Guertin, DASN RDT&E Dir, Transformation)

Strategy for Achieving Beneficial Market Behavior


How to get what we want?
Why competition?
What about risk?
How to reduce complexity?
What makes competition real?
How to level playing field?
How to manage the competitive landscape?
Government Shaped Business Market Dynamics

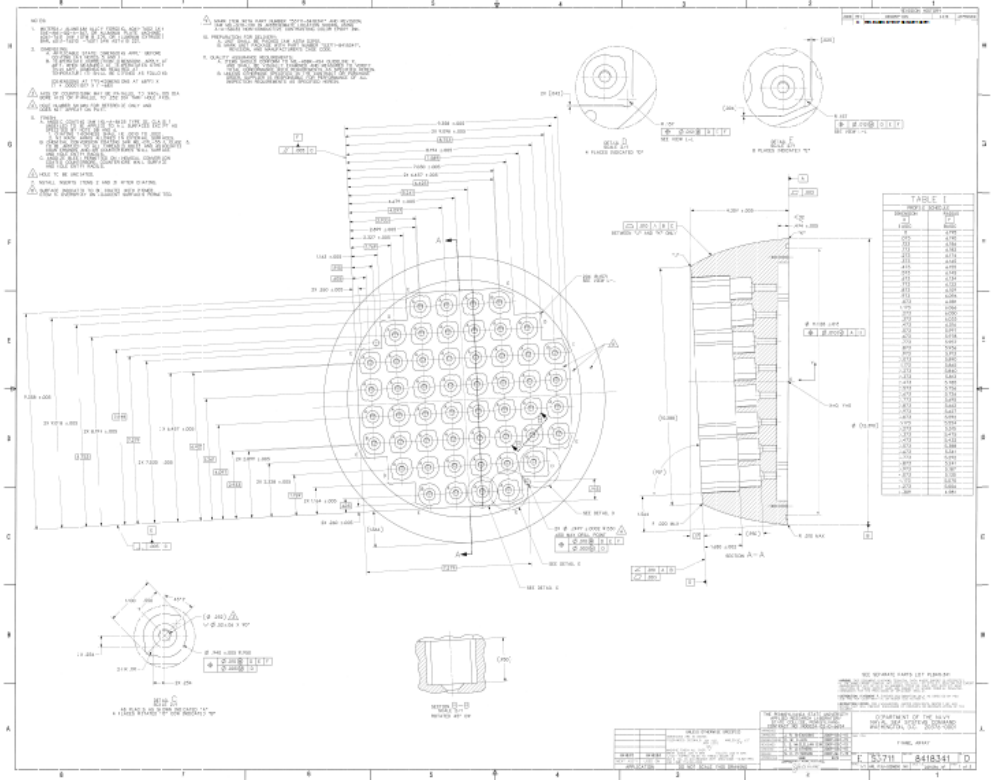
Why do we need an OSA?
(Promotes Competition)

- OSA promotes the benefits of competition
  - Best Technology – Competitors will compete to provide the best technology for the lowest Price
  - Lowest Price – Competitors will compete to drive costs down, saving taxpayers money

BEST For LEAST

Why do we need an OSA? (Lowers Total Ownership Costs(TOC))

- OSA provides the benefit of Lower Life Cycle Costs
  - Net effect of complete (Open) design competition is overall lower costs in product sustainment and overall Life-Cycle



Lower Life Cycle Costs

Why do we need an OSA? (Change Management)

- OSA is the best strategy to manage CHANGE:
  - Change happens every day whether we like it or not
    - Change in Requirements/Doctrine
    - Change in Technology (Hardware/Software)
    - Change in Process Management (New ways to buy and build things)
    - Change in our Software Baselines (due to defect correction)
    - Change in Enterprise Business Strategies (DoD Enterprise Architecture and/or Vendor Business Plans)
  - OSA establishes the environment for ease of CHANGE
    - Risk-prudent competition; Level competition playing field (All innovations have a chance)
      - Wider access to innovation
      - Constant battle rhythm of competition
      - Protects us from Vendor Lock
    - Business Architectures that mirror Technical Architectures
      - Data Rights Business Strategy for ease of access to modules that need CHANGE
      - OPEN interface standards (Public, Popular, Published)
      - Modularity via composability (Plug and Unplug specific functions as needed)

Example of OSA Success: Anti-Submarine Warfare's (ASW) Advanced Processing Build (APB)/Acoustic-Rapid COTS Insertion (A−RCI)/Tactical Control System (TCS) Programs (Navy Program)

- **Performance**
  - Continuous competition yields best of breed applications (Better Quality Solutions/Capabilities for the war-fighter)
  - Able to focus on war-fighter priorities
- **Schedule**
  - System integration of OA compliant software happens quickly
  - Rapid update deliveries driven by user operational cycles (tailored for war-fighter)
- **Cost avoidance mechanisms -~$500M for ASW programs**
  - Software –develop once, use often, upgrade as required
  - Hardware –use high volume COTS products at optimum price points
  - Training systems use same tactical applications and COTS hardware
  - Design for Maintenance Free Operating Periods (MFOP)
    - Install adequate processing power to support "fail-over"w/o maintenance
    - Schedule replacement with improved COTS vice maintaining old hardware
    - Reduced maintenance training required
  - Consolidate Development and Operational Testing for reused applications
- **Risk reduction**
  - Field new applications only when mature
  - Don't force the last ounce of performance
    - Deploy less (but still better than existing) performance or wait until next update

OTHER SUCCESSFUL OSA PROGRAMS

- Office of Naval Research (ONR) Surface Electronic Warfare Improvement Program (SEWIP) (Navy Program)
- Program Manager Integrated Air and Missile Defense (IAMD) (Army Program)
- Unmanned Aerial System (UAS) Control System (UCS) (OSD Program)

OSA Summary

- **Open Systems Architecture Is An Integrated Business and Technical Strategy**
  - **An Open Business Model (A CULTURE of Competition)**
    - **Transparency and leveraging of innovation across the Enterprise**
    - **Sharing risk, asset reuse and reduced total ownership costs**
  - **A Technical Architecture**
    - **Open standards, publishing of key interfaces, full design disclosure**
    - **Modular, loosely coupled and highly cohesive system structure**
  - **Data Rights = License Rights for Technical Data and Computer Software**
  - **Vendor Lock – Can't bring in new players or exercise acquisition choices**
  - **A Successful Open System Architecture can be;**
    - **Added to Replaced Supported**
    - **Modified Removed**

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Hot Topics Forum:
Effectively Managing Data Rights

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Overview

- Review of Data Rights (brief)
- Technical and Computer Software Data Rights
- Data Rights as part of Technology Development Strategy/Acquisition Strategy
- Data Delivery
  - New contracts
  - Current contracts
- Questions/discussion

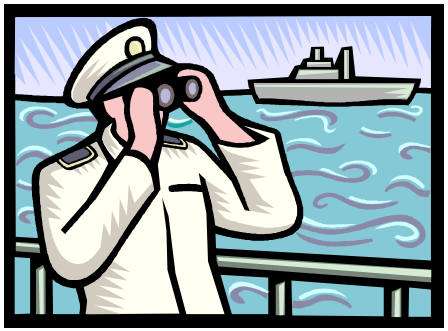
Government License Rights

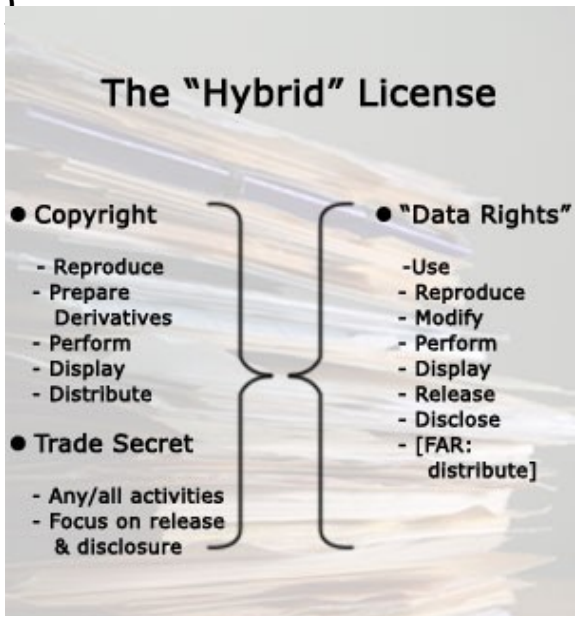
Within Government

- Modify, reproduce, use, display, perform:
  - Unlimited Rights
  - Gov't Purpose Rights
  - SBIR
  - Restricted Rights (SW)
  - Limited Rights

Release or Disclose to Third Parties

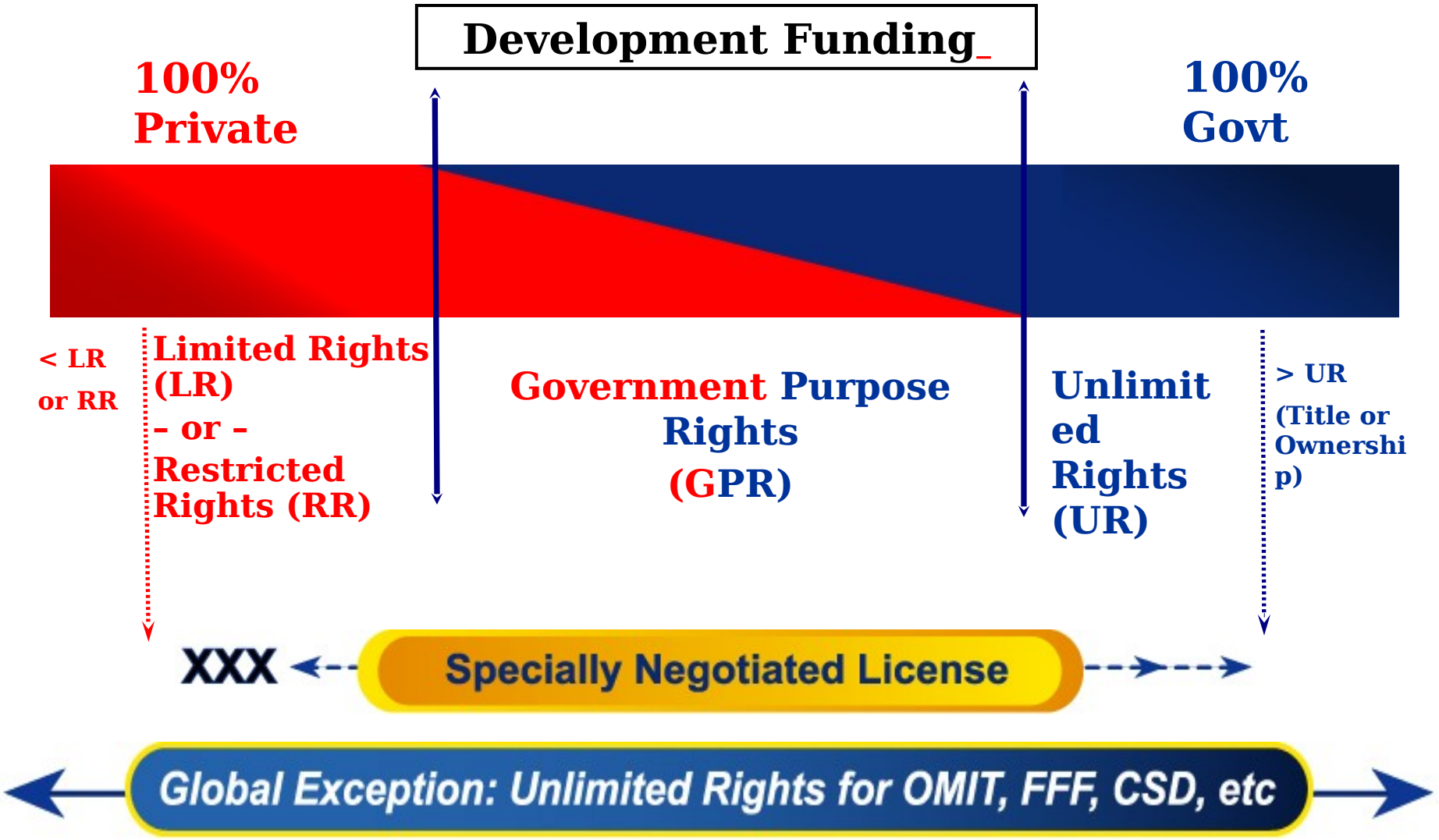
- Unlimited Rights
- GPR (with NDA and for Government purposes)
- Modify, reproduce, use, display, perform





New rules for "Covered Government support contactors."

Quick Review of Data Rights



Processes for Noncommercial Technical Data

Analysis of Data/SW Deliverables

- Will the acquisition be a noncommercial item or a commercial item?
- If a noncommercial acquisition, will the acquisition be for an item, component or process (Technical Data) OR computer software ?

Non-commercial Technical Data Rights Determination Process:

1. Conduct the "Nature of the Data" Test – Compare the list of data deliverables against DFARS 252.227.7013(b)(1) Unlimited Rights list to determine which pieces of technical data the Government will automatically obtain with Unlimited Rights. (Much of the technical data in which the Government has Unlimited Rights not based on funding but based on the "Nature of the Data", i.e. – FFF and OMIT)
2. Conduct "Source of Funding" Test – What are the remaining technical data deliverables and what data rights will the Government receive in each based on the source of funding for

Processes for Noncommercial Technical Data

Analysis of Data/SW Deliverables

- Will the acquisition be a noncommercial item or a commercial item?
- If a noncommercial acquisition, will the acquisition be for an item, component or process OR computer software ?

Non-commercial Technical Data Rights Determination Process (CONTINUED):

3. Analysis of any Data Rights Discrepancies
    - Is there any LR technical data from the prior step in which you would need at least GPR for the life cycle support of the item, component or process?
    - Need to determine a value of the difference between Limited Rights and Government Purpose Rights for any technical data needed for the life cycle support including follow-on competitions in the event the technical data had Limited Rights or SBIR. Alternatively, what is the impact to the program AS and LCSP if the desired level of data rights is not obtained?

Processes for Noncommercial Computer Software

Analysis of Data/SW Deliverables

- Will the acquisition be a noncommercial item or a commercial item?
- If a noncommercial acquisition, will the acquisition be for an item, component or process OR computer software ?

Non-commercial Computer Software Rights Determination Process:

1. Conduct the “Nature of the Data” Test – Compare the list of data deliverables against DFARS 252.227.7013(b)(1) Unlimited Rights list to determine which pieces of computer software the Government will automatically obtain with Unlimited Rights. (Much of the computer software in which the Government has Unlimited Rights not based on funding but based on the “Nature of the Data”, i.e. – FFF and OMIT)
2. Conduct “Source of Funding” Test – What are the remaining computer software deliverables and what data rights will the Government receive in each based on the source of funding for development of the item, component or process to which the

Processes for Noncommercial Computer Software

Analysis of Data/SW Deliverables

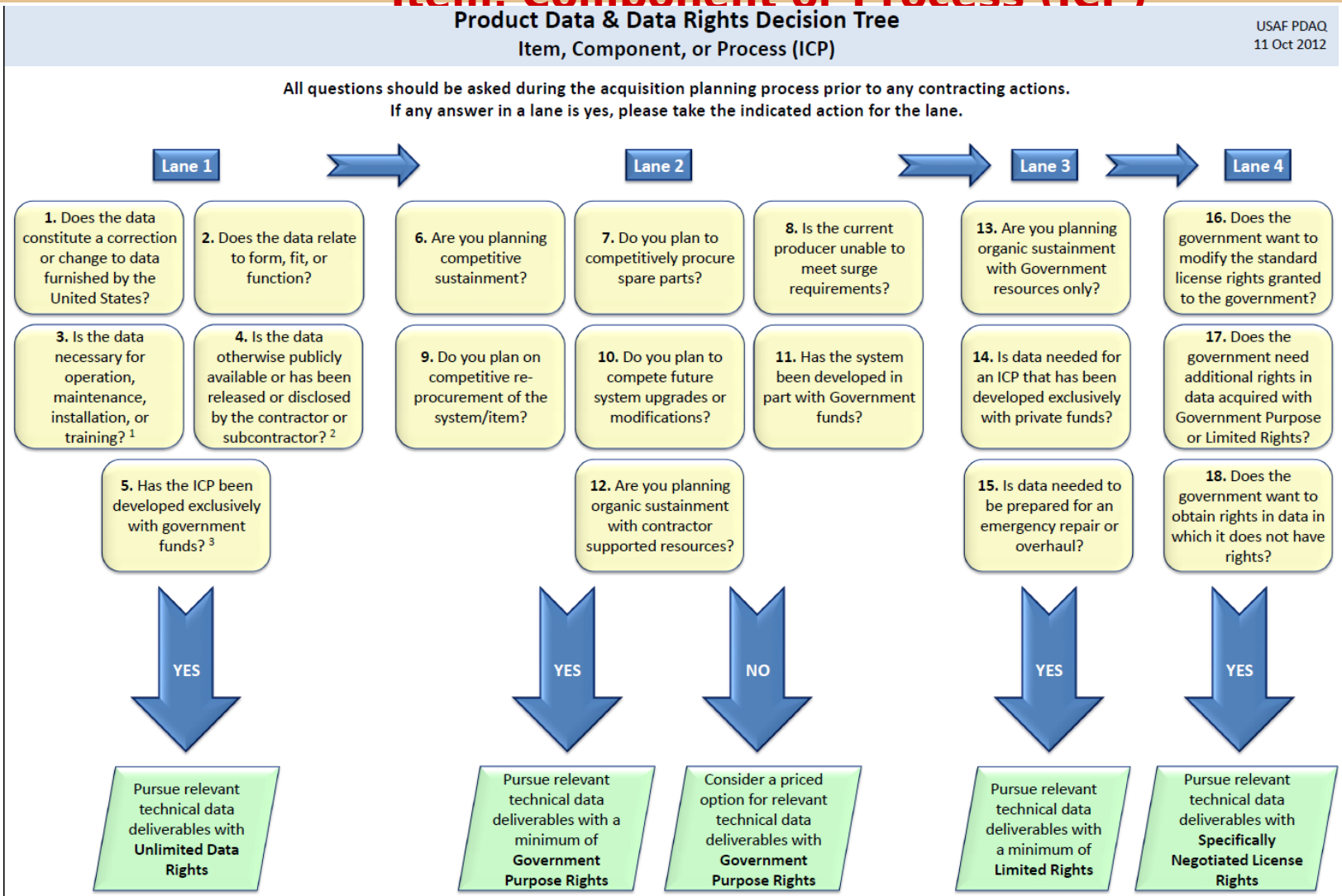
- Will the acquisition be a noncommercial item or a commercial item?
- If a noncommercial acquisition, will the acquisition be for an item, component or process OR computer software ?

Non-commercial Computer Software Rights Determination Process (CONTINUED):

3. Analysis of any Data Rights Discrepancies
    - Is there any LR computer software from the prior step in which you would need at least GPR for the life cycle support of the item, component or process?
    - Need to determine a value of the difference between Restricted Rights and Government Purpose Rights for any computer software needed for the life cycle support including follow-on competitions in the event the computer software had Limited Rights or SBIR. Alternatively, what is the impact to the program AS and LCSP if the desired level of data rights is not obtained?

Product Data & Data Rights Decision Tree

Item, Component or Process (ICP)


Product Data & Data Rights Decision Tree
Item, Component, or Process (ICP)
USAF PDAQ
11 Oct 2012
All questions should be asked during the acquisition planning process prior to any contracting actions.
If any answer in a lane is yes, please take the indicated action for the lane.
Lane 1
Lane 2
Lane 3
Lane 4
1. Does the data constitute a correction or change to data furnished by the United States?
2. Does the data relate to form, fit, or function?
3. Is the data necessary for operation, maintenance, installation, or training? [1]
4. Is the data otherwise publicly available or has been released or disclosed by the contractor or subcontractor? [2]
5. Has the ICP been developed exclusively with government funds? [3]
6. Are you planning competitive sustainment?
7. Do you plan to competitively procure spare parts?
8. Is the current producer unable to meet surge requirements?
9. Do you plan on competitive re-procurement of the system/item?
10. Do you plan to compete future system upgrades or modifications?
11. Has the system been developed in part with Government funds?
12. Are you planning organic sustainment with contractor supported resources?
13. Are you planning organic sustainment with Government resources only?
14. Is data needed for an ICP that has been developed exclusively with private funds?
15. Is data needed to be prepared for an emergency repair or overhaul?
16. Does the government want to modify the standard license rights granted to the government?
17. Does the government need additional rights in data acquired with Government Purpose or Limited Rights?
18. Does the government want to obtain rights in data in which it does not have rights?
YES
YES
NO
YES
YES
Pursue relevant technical data deliverables with Unlimited Data Rights
Pursue relevant technical data deliverables with a minimum of Government Purpose Rights
Consider a priced option for relevant technical data deliverables with Government Purpose Rights
Pursue relevant technical data deliverables with a minimum of Limited Rights
Pursue relevant technical data deliverables with Specifically Negotiated License Rights
Notes
1. other than detailed manufacturing or process data
2. without restriction on further release or disclosure
3. It is permissible to acquire less than unlimited rights (down to limited rights) for data funded exclusively with government funds as long as that data doesn't fit within boxes #1, #2, #3, or #4.
Sources
10 USC 2320 – Rights in Technical Data
DFARS Subpart 227.71 – Rights in Technical Data
DODI 5000.02 – Operation of the Defense Acquisition System

What Deliverables Does the Gov't need?

- Three places to explore:
  - Acquisition strategy/Technology Development Strategy
    - Plan for future increments (upgrades, tech refresh)
    - Provision for unplanned future increments (responding to new requirements)
    - Plans for future competition (follow-on production, spares, support)
  - Logistics support concept (para 7.4 of AS/TDS)
    - Military vs. Civilian vs. Contractor
    - Where work performed (unit, support org. or depot)
  - Other Sources
    - DoDAF 2.02 (viewpoints)
    - Objective architectures
    - Industry standards
    - ….

Classification/Distribution Statement, as required

TECHNOLOGY DEVELOPMENT STRATEGY

[or]

ACQUISITION STRATEGY

FOR

[PROGRAM NAME]

[Sample Outline]

20 April 2011

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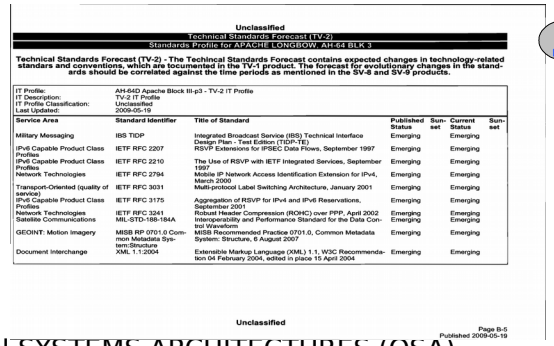

Unclassified

Technical Standards Forecast (TV-2)

Standards Profile for APACHE LONGBOW: AH-64 BLK 3

Technical Standards Forecast (TV-2) - The Technical Standards Forecast contains expected changes in technology-related standars and conventions, which are tocumanted in the TV-1 product. The forecast for evolutionary changes in the standards should be correlated against the time periods as mentioned in the SV-8 and SV-9 products.

IT Profile:	AH-64D Apache Block III-p3 - TV-2 IT Profile				
IT Description:	TV-2 IT Profile				
IT Profile Classification:	Unclassified				
Last Updated:	2009-05-19				
Service Area	**Standard Identifier**	**Title of Standard**	**Published Status**	**Sunset**	**Current Status**	**Sunset**
Military Messaging	IBS TIDP	Integrated Broadcast Service (IBS) Technical Interface Design Plan - Test Edition (TIDP-TE)	Emerging		Emerging	
IPv6 Capable Product Class Profiles	IETF RFC 2207	RSVP Extensions for IPSEC Data Flows, September 1997	Emerging		Emerging	
IPv6 Capable Product Class Profiles	IETF RFC 2210	The Use of RSVP with IETF Integrated Services, September 1997	Emerging		Emerging	
Network Technologies	IETF RFC 2794	Mobile IP Network Access Identification Extension for IPv4, March 2000	Emerging		Emerging	
Transport-Oriented (quality of service)	IETF RFC 3031	Multi-protocol Label Switching Architecture, January 2001	Emerging		Emerging	
IPv6 Capable Product Class Profiles	IETF RFC 3175	Aggregation of RSVP for IPv4 and IPv6 Reservations, September 2001	Emerging		Emerging	
Network Technologies	IETF RFC 3241	Robust Header Compression (ROHC) over PPP, April 2002	Emerging		Emerging	
Satellite Communications	MIL-STD-188-184A	Interoperability and Performance Standard for the Data Control Waveform	Emerging		Emerging	
GEOINT: Motion Imagery	MISB RP 0701.0 Common Metadata System:Structure	MISB Recommended Practice 0701.0, Common Metadata System: Structure, 6 August 2007	Emerging		Emerging	
Document Interchange	XML 1.1:2004	Extensible Markup Language (XML) 1.1, W3C Recommendation 04 February 2004, edited in place 15 April 2004	Emerging		Emerging	

Unclassified

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Published 2009-05-19

TDS/AS Outline
(Technology Development Strategy/Acquisition Strategy)

- **TDS/AS is where documented**
  - **Competition**
  - **Logistics**
  - **Technical Data Rights Strategy (IP Strategy)**
- **DAG 2.8. Technology Development Strategy/Acquisition Strategy (TDS/AS) Outline**
  - **2.8.1. Purpose**
  - **2.8.2. Capability Need**
  - **2.8.3. Acquisition Approach**
  - **2.8.4. Tailoring**
  - **2.8.5. Program Schedule**
    - **2.8.5.1. Interdependencies**
  - **2.8.6. Risk and Risk Management**

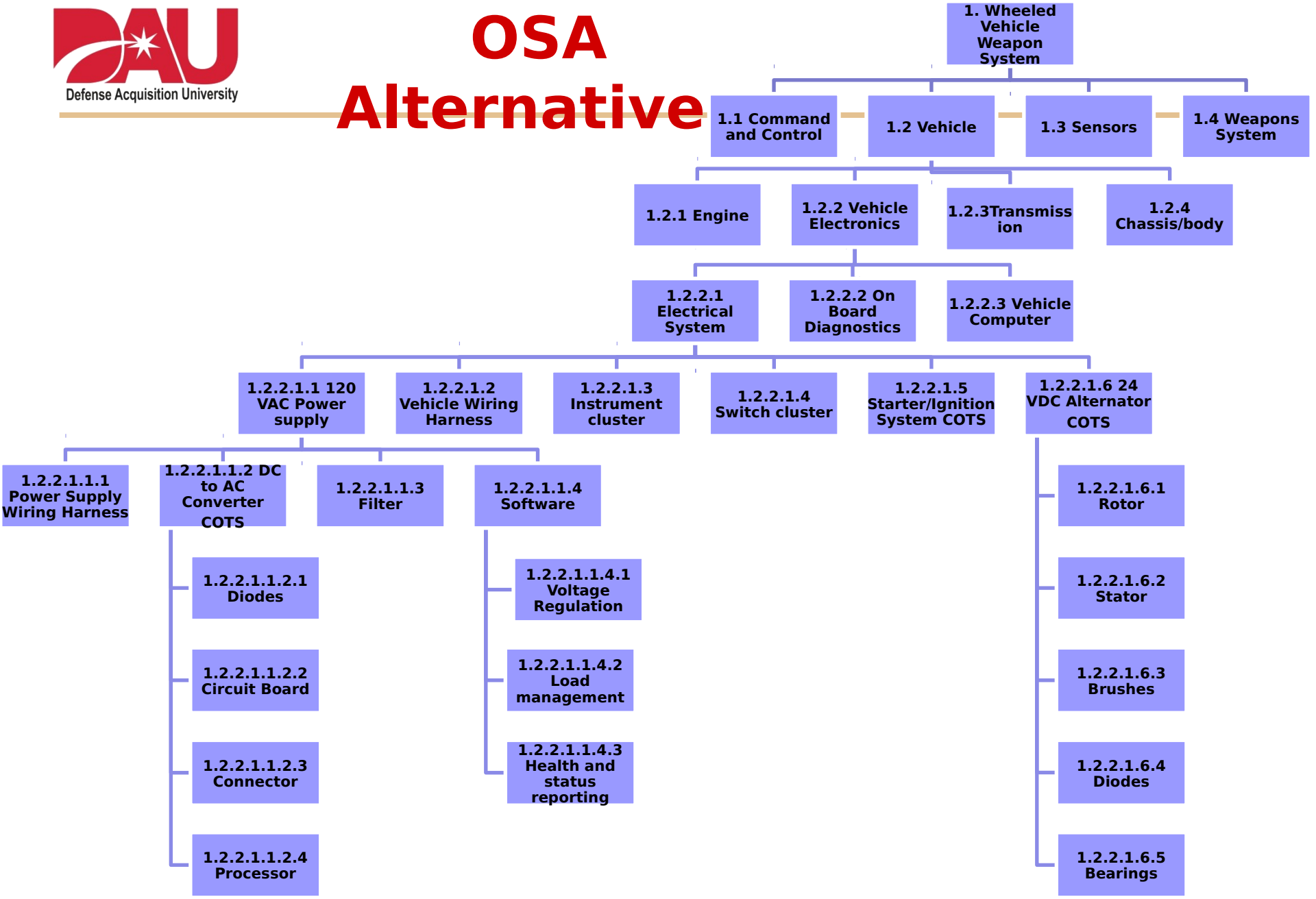
TDS/AS Outline

- **2.8.7. Business Strategy**
  - **2.8.7.1. Competition Strategy**
  - **2.8.7.2. Market Research**
  - **2.8.7.3. Advance Procurement**
  - **2.8.7.4. Sustainment Strategy**
  - **2.8.7.5. Major Contract(s) Planned**
    - **2.8.7.5.1. Major Contract Table**
    - **2.8.7.5.2. Contract Incentives**
    - **2.8.7.5.3. Earned Value Management (EVM)**
    - **2.8.7.5.4. Source Selection Approach**
    - **2.8.7.5.5. Sources**
    - **2.8.7.5.6. Contract Bundling or Consolidation**
    - **2.8.7.5.7. Subcontracting Plan / Small Business Participation**
    - **2.8.7.5.8. Special Contracting Considerations**
    - **2.8.7.5.9. Special Test Equipment**
    - **2.8.7.5.10. Testing & Systems Engineering Requirements**
    - **2.8.7.5.11. Warranty**
    - **2.8.7.5.12. Multiyear Contracting**
    - **2.8.7.5.13. Leasing**
    - **2.8.7.5.14. Modular Contracting (Major Information Technology programs only)**
    - **2.8.7.5.15. Payment**
    - **2.8.7.5.16. Other Relevant Information**

TDS/AS Outline

- **2.8.7.6. Technical Data Rights Strategy** (formerly the Data Management Strategy)
  - **2.8.7.6.1. Technical Data Analysis**
  - **2.8.7.6.2. Provision of Technical Data Rights in Sustainment**
  - ***2.8.7.6.3. Business Case Analysis (BCA) with Engineering Tradeoff Analysis***
  - **2.8.7.6.4. BCA with Priced Contract Option for Future Delivery of Technical Data**
  - **2.8.7.6.5. Risk Analysis**

Discussion of OSA Alternative



Turning Data Requirements into Deliverables

- Use AS/TDS, Logistics Strategy, Architecture to:
  - Define data deliverables
    - Technical data packages
    - Form, Fit, Function & Operations, Maintenance, Installation and Training documents
    - Interface documents/specifications
    - Computer Software/Computer Software Documentation
  - For each, define required rights in technical data and software
  - For data needed in future, use options
  - Use Deferred Ordering Clause, Data Accession List
    - Permits ordering data not explicitly described in RFP CDRLs
- Helpful Guide: Army Guide for the Preparation of a Program Product Data Management Strategy (DMS) with 2012 addendum
- Additional guidance including RFP Language: DoD Open Systems Architecture Contract Guidebook for Program Managers

Approach to Breaking Vendor Lock

Establish an Environment for

- Publish the intent to compete
- Establish Gov't/Industry/Academia forum
- Establish a Flexible Contracting Approach

Leverage and Exercise Data

- Assess what you have and what you need
- Determine where the Government has unlimited rights
- Verify delivery of all CDRLs, confirm that markings are correct and challenge questionable assertions

Change approach to Systems Engineering

- Develop a common architecture across a product line or similar Programs of Record
- Functionally decompose legacy programs

Hold Competition

- Create an alternative
- Limit integrator role
- Use GPR for next competition
- Inject OSA through technical insertions
- Use government labs for integration

Establish an Environment for Change

part of past performance evaluation

- Associate contractors sink/swim together

Establish an Environment for

- Incentive fees
- Include OSA and data rights as part of evaluation
- Reward reuse in evaluation criteria

What if - we don't have the Data

- Mod contract to add CDRLs for needed data
  - Regardless of limitations on rights
  - Cost of delivery of existing data may be as little as cost of reproduction/delivery (actual cost dependent upon many factors)
  - Require delivery to the Government
    - Verify markings
    - Challenge as appropriate
- Delivery should be hard copy, disc or electronic to a Government (not contractor) server
- Contractor format will minimize cost

What if – Gov't has the Data, but not Sufficient Rights

- Use law to challenge/negotiate change for:
  - Operations, Maintenance, Installation & Training
  - Form, Fit and Function
  - Computer Software Documentation
- Is consideration owed the Government for some prior contractor shortfall? If so, use this leverage.
- Negotiate options to increase rights to GPR
- Verify markings on data match contract
  - Should be paragraph by paragraph, not blanket
  - Challenge where appropriate
- Include conditions where no cost to go to GPR (contractor abandons product/product area, bankruptcy, etc.)

Possible actions on existing and follow-on contracts

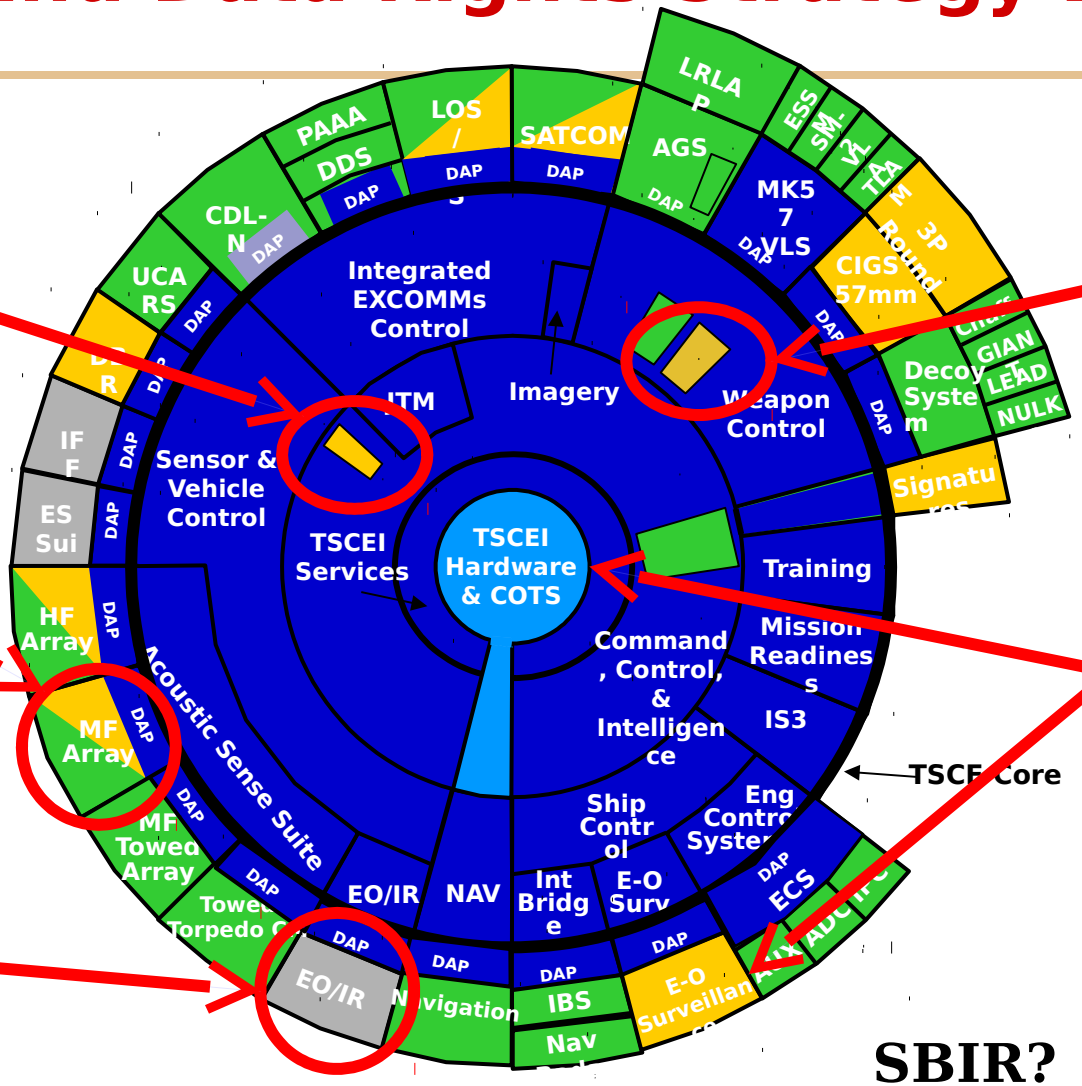
- Design replacement as appropriate
  - Customer can always design or contract for replacement (SBIR??)
  - Sometime just the plan to reverse engineer will influence contractor
  - May not be an option for some software
- Follow-on contracts need not have same data rights clauses
  - Chance to re-negotiate
  - Data rights can be a source selection criteria (technical and cost)
- Ensure you take delivery of all data – even if delivered with less than Gov't Purpose Rights
  - Why:
    - Abandoned product
    - Company goes out of business
    - Retirement/death of key person(s)
    - Company is less than forthcoming when facing re-compete
  - Use "escrow account" if necessary (especially useful with commercial product technical data/software)

IP and Data Rights Strategy Decisions

What limits competition and third party product integration?

How do we manage acquisition of components?

Where can we use SNLs to drive fruitful market forces?



Where do we want innovation from small business?

Where is it acceptable to have COTS, limited, or restricted rights?

SBIR?

What does your map look like?

- Unlimited
- GPR
- COTS
- Restricted Rights
- To Be Negotiated

Summary

- Biggest challenge is determining Government's needs (present and future)
  - Acquisition Strategy – Business Considerations
  - Logistics Support Strategy
  - Architecture (interactions both internal and external)
- Document requirements in AS/TDS
- Incorporate into RFP & subsequent contract
- Ensure delivered as agreed to in contract
- Include a Deferred Ordering Clause
- When necessary modify existing contracts to get required data

Addition Training on Intellectual Property and Data Rights available in CLE 068